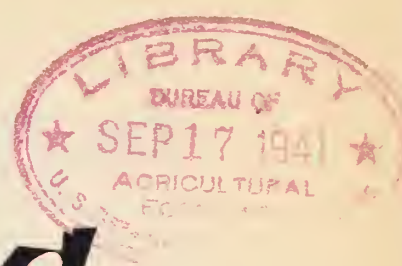


Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.



M34



Marketing Activities

HARRY E SMALLWOOD
BUR OF AGR'L ECONOMICS LIBRARY
U S DEPT OF AGRICULTURE
4-K WASHINGTON D C

Issued Monthly by

**AGRICULTURAL
MARKETING
SERVICE**

U. S. DEPARTMENT OF AGRICULTURE

Vol. 4 No. 9
September 1941

-IN THIS ISSUE-

BILL JONES SELLS SOME LEAF

By E. D. Booker Page 3

Mr. Booker, Agricultural Marketing Service tobacco specialist, has the gift of vivid description. After reading about the heat in that Georgia warehouse we reached for our favorite soft drink.

IT LOOKS LIKE A BIG YEAR FOR
THE TOMATO-CANNING INDUSTRY

By T. R. Hall Page 5

Whether its catsup, chili sauce, or just plain, ordinary canned tomatoes, it probably came from a processing plant. T. R. Hall, Agricultural Marketing Service statistician, delves into a mass of figures and comes up with a few of the more important ones.

RATIONING BOSSY

By John L. Wilson Page 9

Bossy won't have a care in the world this winter, says Dr. Wilson, Agricultural Marketing Service statistician. She will live off the fat of the land--all in exchange for a little more milk.

BETTER PACKAGES FOR BETTER PRODUCTS

By J. R. Sanborn Page 19

You may not have realized it, but packaging food products properly is no easy job. J. R. Sanborn, in charge of paper sanitation research at the N. Y. State Agricultural Experiment Station, mentions a few of the difficulties.

SMITH-DOXEY CLASSING--A MAJOR PROJECT

By W. B. Lanham Page 22

More farmers than ever before will have their cotton classed under the Smith-Doxey services this year. W. B. Lanham, in charge of this work, tells why.

--V--

Marketing Activities is published monthly by
The Agricultural Marketing Service
C. W. KITCHEN, CHIEF

Address all inquiries to the Editor
Marketing Activities, U. S. Department of Agriculture
Washington, D. C.
HARRY W. HENDERSON, EDITOR

BILL JONES SELLS SOME LEAF

By E. D. Booker

"What's my leaf going to bring?" That's the question tobacco grower Bill Jones asks himself as he waits for sales to get under way in a Georgia tobacco warehouse. Bill's neighbors sold their "first pullings" last week for an average of \$22.00, and Bill, looking over the baskets containing the golden yellow leaves he has labored so hard to produce, is sure that his crop is just as good as theirs.

While Bill is busy with his thoughts, U. S. Department of Agriculture inspectors carefully look over each basket to determine what U. S. grade shall be placed on the basket sales coupon. Federal inspection and market news services are mandatory on this market, because patrons of the market, by a two-thirds majority, voted for the services last year. They are furnished without cost to growers.

Bill studies a Federal market news report. His first basket has been graded P3L and he sees by the price sheet that that grade averaged \$29.00 yesterday. His next basket is graded P4L, which averaged \$19.50. He puts the price sheet in his pocket as he makes a purchase from a small freckle-faced boy who has been advertising fresh boiled peanuts in a shrill voice.

The sale gets under way and several rows of baskets are sold. The sun, bearing down relentlessly on the tin roof and sides of the warehouse, has turned the building into a huge oven. The buyers, their shirts wringing wet, stop frequently to catch a quick drink of water and a moment's rest. But the auctioneer, that perspiring, shirt-sleeved, tieless figure of radio fame, is in fine voice despite the heat. As he "knocks out" each sale to the highest bidder, a ticket boy pulls out a carbon copy of the basket sales coupon, which shows the grade and the price at which the lot was sold.

Jones Gets a Good Price

The auctioneer finally reaches Bill Jones' tobacco and the first basket goes for \$27.00. The next goes for \$23.00. Bill has been told in educational meetings and at grading demonstrations that a basket should sell near the grade price quoted the previous day. He is \$2.00 short of the price on one basket but \$3.50 over on the other, so he doesn't "turn the ticket" or reject the bid on the low pile. Instead, he goes to the warehouse office to get his check. "Made a good sale," Bill tells the pay-off man. "Ain't got no room to complain. Brought about what the Government said it ought to."

At 3 p.m., after all of the carbon copies of the basket coupons have been collected, the car driver--known to the tobacco inspectors as Paul Revere--rushes the tickets to the Federal market news office 75 miles away. Tickets are collected from several markets en route and about

7,500 are on hand by the time the office is reached late in the afternoon. Speed and accuracy are what count now as the market news employees sort the tickets by grade and make the necessary tabulations. After all of the calculations have been made, price sheets are mimeographed showing what each grade--there are 146 possible grades--averaged that day.

Early the next morning the car driver starts out again. This time the job is to deliver the price reports to the markets before the sales start at 8:30. After reaching the markets, the reports are hung up in prominent places in the warehouse. The inspectors also keep a supply of them on hand to give to whomever wishes one.

The prices that appear on the grade sheet are also read in the morning papers in the Carolinas, Virginia, Tennessee, and Kentucky. The prices are wired to the press associations, together with an analysis of the day's market, by the market news reporter in charge of the office. The deadline on the release is 8 p.m. and much scurrying around is done in order to "keep in print."

Many People Use the Reports

A radio release is issued and growers in other tobacco-producing States, listening at their usual early morning hour, are glad to hear that prices are "good" in the tobacco markets of the Deep South. It generally means that tobacco will bring a good price in their own markets.

A busy tobacco executive in Richmond looks over the weekly market news report and sees that it confirms information already furnished by his "circuit riders." Cutters are up from \$1 to \$2 above opening week and it will be necessary to pay better prices if enough good cigarette grades are to be obtained.

A New York financial advisory service reports to the sales manager of a large Detroit automobile firm that prospects are excellent for a good fall business in the Bright Tobacco Belt. The Government market news report shows that tobacco is selling at a profitable price to growers.

A worried fertilizer credit manager in Savannah sighs with relief as he reads the news report and notes the \$23.06 average for the first week of sales. Collections will be good--farmers will be able to "pay out."

But what has happened to Bill Jones? He cashes his check, buys a cigar, and heads his ancient truck for home--arriving about 10:30 p.m. Bill is plenty satisfied with the sale he made, so he loads the truck with his best leaf. He wants his brother-in-law to get an early start in order to be in on the first sale in the morning. Brother-in-law, having been told about the intricacies of the inspection and market news service, is instructed again just before leaving to get the "right" price. Bill Jones goes to bed.

IT LOOKS LIKE A BIG YEAR FOR THE TOMATO-CANNING INDUSTRY

. By T. R. Hall

Most of us can still remember the feverish activity that accompanied the preparation of canned tomatoes, catsup, and chili sauce in Mother's kitchen. It was an annual event, beginning late in August and continuing until frost. Then, after every kettle and spoon had been washed and put away, Mother could point with quiet pride to storage shelves loaded with shining glass jars put up in anticipation of the winter's requirements.

Today modern industry has done much to transfer the job of canning from the family kitchen to large-scale processing plants. The old-fashioned "stir-and-taste" methods, though effective, have been replaced by intricate machinery and scientific controls. The glass jars have largely given way to metal containers. But the products themselves have lost nothing in the transition. They are still as good as the kind that Mother used to make.

The canning factories worked overtime last year to put up the record crop of 2,274,000 tons produced by tomato growers. And it was well that they did, for a vigorous demand has characterized the 1940-41 marketing season to date. The expanding military machine, the increase in industrial employment, and purchases for the British have all meant a good market for canned tomatoes and tomato products.

The keen demand for canned goods has also meant rapidly diminishing stocks despite the record high tonnage produced for processing in 1940. Checking up on the quantity of canned whole tomatoes on hand July 1, 1941--definite information on the tonnage utilized for various tomato products is lacking--processors found that they had about 2,300,000 cases. A year earlier, on the corresponding date, nearly 3,000,000 cases were on hand.

Increased Production Urged for 1941

The increased demand was sensed early in 1941. On April 17 the U. S. Department of Agriculture urged tomato canners to expand their 1941 plantings by enough to produce a pack of 44 million cases--a goal far beyond the all-time pack record of 34 million cases of canned tomatoes established in 1925. And canners have done their best to cooperate. On the basis of reports to the Agricultural Marketing Service, about 469,000 acres of tomatoes for processing were planted this year, compared with approximately 409,000 acres in 1940--an increase of 11 percent.

Production does not depend entirely on the acreage planted, however. The weather that prevails during July and August plays an important part in determining the size of the tomato crop. Favorable August 1 production prospects this year were fully maintained during the early part of the month, although some uneasiness developed among processors after sev-

oral weeks had passed without adequate rainfall. But reports from canners and processors as of August 15 indicated that the tonnage harvested this year may total 2,416,400 tons--about 6 percent larger than the record crop of 1940.

The harvest has already started in the great tomato-producing areas of the East, Middle West, and Far West. Trucks and still more trucks laden with rich, vitamin-packed tomatoes discharge their loads at the canning factories and go back to the fields for more. Growers' returns mount up--they will be larger in the aggregate than in many a year. The warehouses slowly fill with case after case of canned whole tomatoes, catsup, chili sauce, and the other products of the processor's skill--canned goods for millions of consumers at home and abroad. It looks like a big year for the tomato-canning industry.

--V--

85 PERCENT OF GRAIN STORAGE SPACE OCCUPIED SEPTEMBER 1

Grain in commercial storage at 40 terminal markets reporting to the Agricultural Marketing Service increased nearly 6 percent during August. About 85 percent of the available commercial space was occupied September 1 compared with 80 percent a month earlier. This does not include private storage in mills and processing plants at these points. Commercial stocks, including all kinds of domestic and foreign grain totaled 376,729,000 bushels September 1, while the total commercial storage space was estimated at approximately 450 million bushels.

--V--

IDAHO-OREGON POTATO PROGRAM WENT INTO EFFECT SEPTEMBER 5

A marketing agreement and order regulating the handling in interstate commerce of Irish potatoes grown in 34 Idaho counties and in Malheur County, Oregon, became effective September 5. Results of a recent grower referendum show that out of a total 1,212 growers voting, more than 91 percent, or 1,108 voters, favored issuance of an order that will apply to all handlers of potatoes produced in these counties.

The Idaho-Oregon program provides for the prohibition of the shipment in interstate commerce of potatoes grading lower than U. S. No. 2, the minimum U. S. grade, and of sizes smaller than one and one-half inches in diameter. Federal-State inspection of all shipments of potatoes from the area covered is required.

--V--

The United States has 1,060,852,374 acres of land in its farms.

PRICES OF FARM PRODUCTS REACH HIGHEST LEVEL SINCE MAY 1930

Prices received by farmers for their products advanced 6 points during the month ended August 15 to reach 131 percent of the 1910-14 level, the U. S. Department of Agriculture reported recently. Following other recent advances, this rise carried the index to a level not exceeded since May 1930.

Prices paid by farmers continued to rise, but prices received advanced at a faster rate. This brought the two indexes to exactly the same level and the ratio of prices received to prices paid stood at 100 percent for the first time since January 1937. With this exception, the purchasing power of farm products has been consistently lower than the pre-war average since May 1928.

The index of prices paid, interest, and taxes also advanced during the month and on August 15 was 135. On this basis, the purchasing power of farm products was 97 percent of the 1910-14 average.

--V--

REGULATIONS ISSUED FOR COTTON SERVICE TESTING

Regulations have been issued under the Cotton Service Testing Act passed last April covering the size of samples and a schedule of fees that will be charged for various fiber and spinning tests, the U. S. Department of Agriculture said recently. The new testing service provided under the act is intended to furnish breeders of American cotton with prompt technical information on the quality of the cotton varieties, strains, and progenies developed.

The various types of fiber tests available under the act include analyses of fiber length, strength, fineness, maturity, cross-sectional characteristics, and cellulose crystalline alignment with the X-ray. Where spinning tests are requested, the samples will be manufactured into several counts of cotton yarn, and the reports will include analyses of waste content, yarn strength and appearance, and general manufacturing performance.

Samples of lint may be as small as 8 ounces, where fiber tests are desired, or 5 pounds, where complete fiber and spinning tests are needed. Fees range from 20 cents per sample for fiber length analyses to \$40 for complete fiber tests and a combed yarn spinning test.

In the past it has required years of commercial use to show definitely whether or not certain cottons possessed the qualities desired by manufacturers. With the new service it will be possible for breeders to obtain this information quickly from small samples of lint.

BAE ISSUES REPORT ON PROPOSED
HUNTINGTON, W.VA., PRODUCE MART

"The Wholesale Fruit and Vegetable Market of Huntington, W.Va.," a supplement to the mimeographed report of October 1940, makes specific recommendations as to the location and type of wholesale fruit and vegetable market needed at that city. The report, issued by the Bureau of Agricultural Economics, was prepared by W. C. Crow and W. W. Armentrout.

A modern market with rail connections, adequate facilities for loading and unloading trucks, wide streets, and parking areas is recommended. Such a market, it is estimated, might be built for about \$300,000 on land located somewhere between 5th and 29th Streets.

At the request of the Chamber of Commerce of Huntington, representatives of the Bureau of Agricultural Economics and the West Virginia College of Agriculture made a brief survey of the Huntington market in September 1940 and published a report presenting some general conclusions. In April 1941 the Chamber of Commerce and the Market Commission, which had been appointed to consider plans for market improvements, made a further request that these agencies make a more detailed study to point out specifically what type of market is needed, where it should be located, and how much money could reasonably be spent in providing it. The supplementary report provides specific answers to these questions.

--V--

BUTTER PRODUCTION UP IN JULY

Creamery butter production in July was estimated by the Agricultural Marketing Service at 196,685,000 pounds, a record output for the month. Output continues high despite diversion of some milk from creameries to cheese factories. Excellent pastures, together with the most favorable butterfat-feed price relationship in 30 years, encouraged heavy feeding of grain and concentrates.

--V--

BIG GAME INCREASING
IN NATIONAL FORESTS

Big game animals, nearly doubling in number on the National Forests every 10 years since 1908, are now estimated at more than 2 million head. Taking its "census" during the winter when the animals tend to concentrate in certain feeding areas, the Forest Service reports that the big game population has increased from 693,000 in 1924 to 2,100,000 at the beginning of 1941. In addition to a number of other types of game, some 32,000 wild house cats were roaming the forests.

RATIONING BOSSY

By John L. Wilson

It is nothing new for Bossy, the milk cow, to feel the impact of priorities on the feed supply from which she must draw the raw materials manufactured into milk. For generations she has been competing for feed with other types of livestock and with commercial outlets. But with her it is not the OPM nor the OPACS that controls the allocation. It is the American farmer who holds the reins on distribution of the feed. And like the industrial priority boards, he makes his decisions with an eye to where the greatest return is likely to be obtained.

Ordinarily, Bossy is just one of the common herd. She takes her share as the farmer doles it out and continues to make her contribution toward feeding the people. But this year the priority pendulum is swinging her way. She occupies one of the spotlight positions in supplying the Nation with food for defense. None other than Secretary of Agriculture Wickard has called upon her for an extra contribution to the welfare of the country. To supply a third more cheese, a fourth more evaporated milk, and twice as much dried skim milk for human consumption, Bossy will have to step up her production 6 to 8 percent. And to do that she is going to need more raw materials.

When Government officials meet to determine raw material priorities for industry, they have the advice of well-informed specialists in the various fields affected. The farmer, when it comes to feed-rationing problems, likewise has expert advice. One of the services furnished by his own specialists in the Department of Agriculture is the information on prices, which enables him to determine the rate of feeding. In some years the price currents ebb and flow, but this year there is no mistaking their direction. Under the national defense effort prices of dairy products have risen sharply, and already a response in feeding is under way. In early August the quality of grain fed per milk cow had reached mid-October proportions. In looking ahead toward the coming winter, it appears that an all-out feeding campaign may be in the offing for Bossy.

Enormous Qualities of Feed Required

America's 25 million cow-power milk producing machine is indeed a giant factory. Every year it absorbs some 350 to 400 billion pounds of plant products for conversion into human food. The value of the intake runs in the neighborhood of one and a quarter billion dollars. Nor is all the feed consumed converted into milk. Part of it goes as overhead to keep the plant in operation - maintenance, the feeder calls it. With the average milk cow producing about 4,500 pounds of milk, probably two-thirds of the nutrient intake goes for maintenance and only one-third for milk production. But since it is only Bossy that can separate nutrients for operation and nutrients for production, the farmer just supplies the

feed and lets her handle the situation in her own way.

Compared with certain other farm animals, the milk cow has been lauded for her ability to utilize large quantities of rough feed. Her adaptability in filling this role has a physiological origin. She belongs to the group of animals classified as ruminants; that is, her stomach is divided into four specialized compartments. One of these, the rumen or paunch, provides ample storage space for hastily swallowed bulky feed, and, by soaking and bacterial action, prepares it for later digestive processes. The cow may, at leisure moments, cough up her "cud" and chew the feed more thoroughly. Through this rumination mechanism the milk cow is well adapted to the consumption of fibrous crops such as hay, fodder, and silage.

Back in the days when the cow produced milk largely to feed her offspring, she was able to obtain enough energy and other nutritive essentials from roughage alone. However, selection and breeding of cows for the specialized purpose of producing milk has developed an animal that can utilize for production of milk more nutrients than can be obtained from digestion of low-energy feeds. Concentrated feeds are also cheaper in relation to dairy products than in earlier days when pasturage was more plentiful and crops had to be raised by hand methods. Consequently, farmers have stepped up the nutrients in the ration by including grain crops and commercial by-products of grain and oil-seed milling operations. But roughage still continues to form a basic portion of the milk cow's ration, furnishing part of the nutritive energy and supplying certain vitamins and minerals required to keep the animal in good health.

Dairy Farmers Furnish Information

The problem of what a milk cow should eat has been the inspiration for books and articles voluminous enough to choke even Bossy herself. In the main, these are couched in terms of nutritive requirements -- energy, protein, minerals, and vitamins -- with a discussion on how each individual feed, if used, is likely to contribute to these requirements. The farmer's practical problem is to combine various feeds into a ration that will promote milk production. His reactions must be governed not only by nutritional requirements but also by economic factors -- availability, cost, and probable returns. What kind of roughage does he actually feed? How much and what kind of concentrated feeds does he supply his milk cows?

On these subjects the Agricultural Marketing Service has been collecting information from its "dairy correspondents" for more than a decade. These correspondents are a group of over 4,000 farmers from all parts of the country who voluntarily report feeding practices on their individual farms at various times during the year. Since dairy correspondents' herds average about 11 cows per farm, feeding practices tend to approach those on farms that produce some dairy products for sale,

rather than feeding operations on an "average" farm, which would have less than half that number of milk cows. Nevertheless, the reports from the dairy correspondents throw considerable additional light on the raw materials from which milk is manufactured.

Pasture constitutes one of the most important single sources of Bossy's raw material. Reports from farmers indicate that about two-fifths of the feed consumed by the Nation's milk cows in an ordinary year is obtained by grazing. Bossy is a pretty good mowing machine and can put up grass with a small labor cost -- one of the reasons that pasture feed is about the cheapest form of nutrient available. Furthermore, nutrition experts tell us that pasture grass is good-health insurance for Bossy. A few months on pasture does much to insure adequate reserves of Vitamin A and other organic nutritive essentials that may be lacking during the winter feeding period.

The length of the pasture season is largely settled by the weather man. In extreme southern sections of the country, milk cows are on pasture practically the year around; but in many northern areas the season lasts only from late May until mid-October. For the country as a whole, the proportion of the milk cow's feed obtained from pasture is usually small until early April, then increases as the pasture season moves northward. In June it reaches a peak with probably four-fifths of all feed coming from this source. Good pasture will supply sufficient nutrients to support production of 1 to $1\frac{1}{4}$ pounds of butterfat daily -- somewhat above the average cow's production at that time.

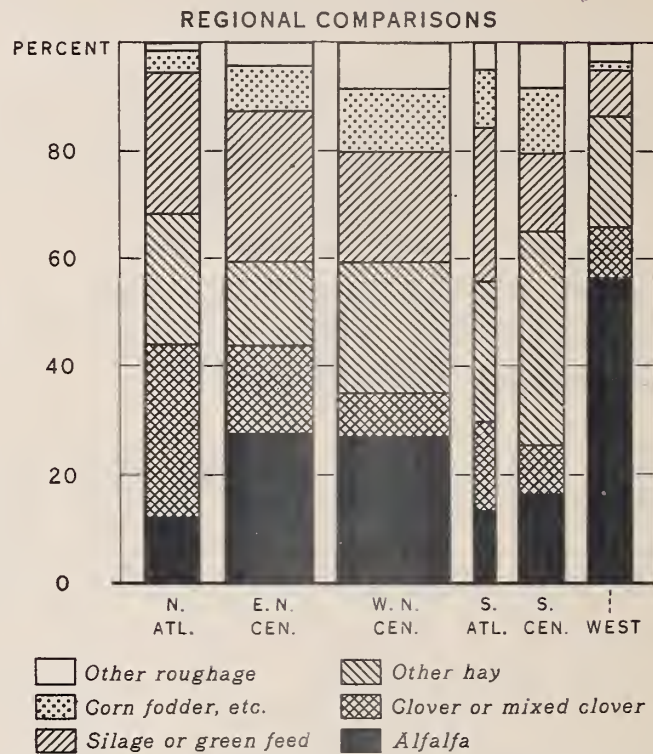
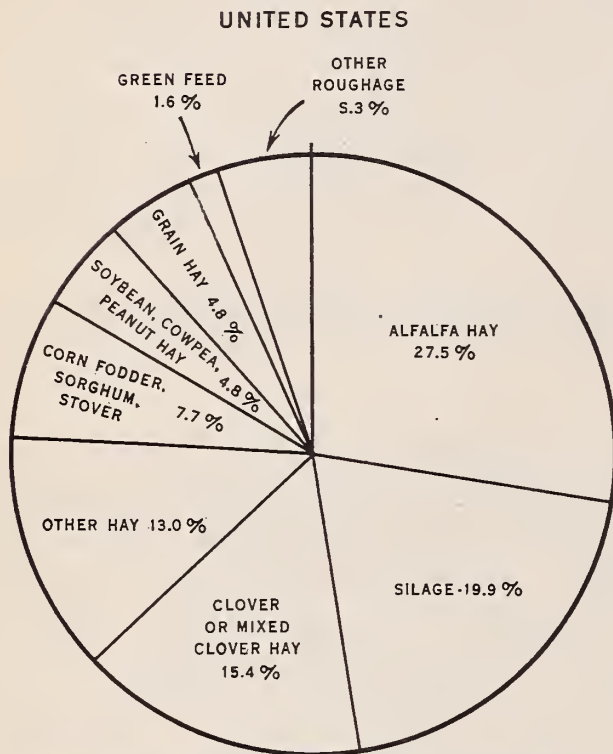
However, pastures remain at their best for only a short period. As the summer advances the grass dries and matures, and although still excellent feed for many classes of livestock, it becomes less desirable for producing milk than the young succulent herbage of earlier months. In some years when drought prevails even the matured grass may be very scanty. The proportion of feed milk cows obtain by grazing declines through the summer. Although held up late into the fall by the pasturing of hay, meadows, and stalk fields, it again approaches negligible proportions as the cows in most areas go onto winter feed.

Alfalfa Leads The Winter Roughages

During the winter the milk cow's roughage ration must come from such dried or preserved plant products as hay, fodder, and silage. To obtain information on kind of roughage fed to milk cows, reports were collected from dairy correspondents during the 5-year period ending with 1937. On the basis of these reports, alfalfa hay stood out as the leading roughage fed to milk cows, both from the standpoint of proportion of reporters feeding it and percentage of total roughage supplied. Slightly over half the farmers fed alfalfa, and, in terms of hay equivalent, this legume made up more than a fourth of all roughage other than pasture. Of the hays, clover or mixed clover came next, accounting for nearly

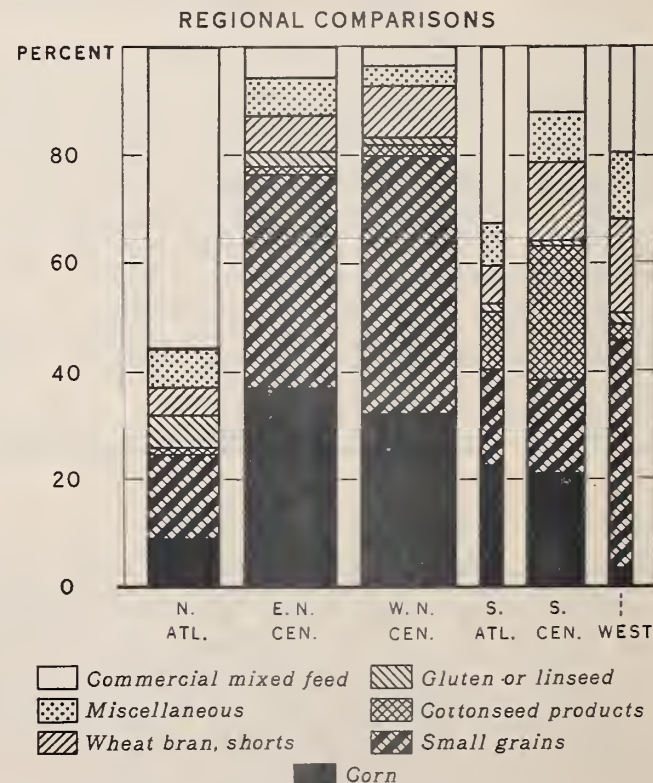
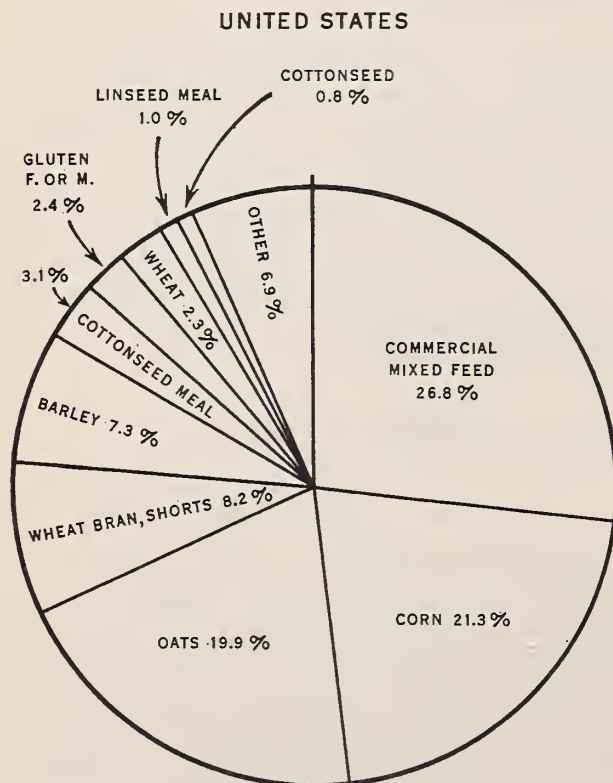
VARIOUS FEEDS USED IN RATIONS FED TO MILK COWS AS REPORTED BY DAIRY CORRESPONDENTS

ROUGHAGE OTHER THAN PASTURE
EACH KIND AS PERCENTAGE OF TOTAL *



* 1933-37 AVERAGES BASED ON OCTOBER 1 REPORTS ON QUANTITIES FED OR TO BE FED DURING YEAR. EXPRESSED AS RELATIVE QUANTITIES OF HAY EQUIVALENT, 1 LB. HAY=3 LBS. SILAGE, OR GREEN FEED=2 LBS. OTHER ROUGHAGE.

GRAIN AND CONCENTRATES
EACH KIND AS PERCENTAGE OF TOTAL ^Δ



^Δ 1931-40 AVERAGE OF FALL REPORTS ON QUANTITIES FED AT THAT TIME, AND CONSEQUENTLY NOT STRICTLY REPRESENTATIVE OF AVERAGE RATION FED DURING YEAR

three-fifths as much as alfalfa. Clover hays predominated in northeastern areas where clover-and-timothy has been universally raised for years. Substantial percentages of other types of hay were also fed with about a sixth of the farmers reporting soybean, cowpea, or peanut hay, about the same proportion grain hay, and about a third reporting miscellaneous hays. Averages for more recent years might show shifts toward more legume hay and some newer crops, such as lespedeza, which have come into greater prominence in some areas since the 1933-37 period.

The quality of the hay available for milk cows depends upon both kind of plant utilized and curing weather. From the standpoint of hay quality, the bovine population might well follow Horace Greeley's famous advice and "Go West." Not only is the proportion of legumes in the hay larger in the West, but the preponderance of sunny skies approaches ideal conditions for curing hay of the highest quality. And when roughage has to furnish vitamins for keeping the cow in good health, quality is a number one essential. So strong is the stress on quality that in recent years a few artificial dryers have appeared in some parts of the East to counteract the effects of the humid weather and frequent rains that so frequently damage the hay crop.

While hay is the mainstay of the milk cow's winter roughage ration, it is usually supplemented by other forage crops. In the larger, more specialized dairy herds the elite of the bovine family can indulge their winter appetites on canned succulent roughage better known to the dairyman as silage. Silages made from green corn, sorghum, and, in recent years, even from grass and legumes add zest to an otherwise dry winter ration. About a third of the dairy farm reporters fed silage to their milk cows in the 1933-37 period, and, on a dry-matter basis, the silage made up about a fifth of the winter roughage ration. For the herds to which silage was not available farmers fell back on fodder to complete the roughage supply for their milk cows. Just short of half of the dairy reporters fed fodder or stover obtained from corn or sorghum plants. This represented the largest proportion feeding any one roughage other than alfalfa hay. A surprising number of farmers, approaching a third of the total, allowed their milk cows some straw, either by feeding directly or by permitting them to have access to a stack.

Grains and Concentrates Needed this Winter

If Bossy is going all-out for defense this winter, however, added emphasis is likely to be placed on concentrated feeds in the ration. To increase milk production the milk cow must step up intake as well as output for the size of the milk producing plant is limited by the number of the milk cows. There will be a few more cows -- probably about 3 per cent more than last year. Thus, much of the anticipated increase in milk production must be obtained by speeding up the rate of flow through the existing plant. If this is to be accomplished, more nutrients must be

put through the cows. A larger proportion of grains and concentrates in the ration means more nutrients for milk production. And this in turn focuses attention on the quantity and kind of concentrated feeds the farmer usually supplies his milk cows, and some of the principles that govern his feeding practices.

In the average dairy herd the quantity of grain and concentrates fed per milk cow is highly seasonal. During the early summer months, when pastures are lush and prices of dairy products are approaching their seasonal lows, the farmer usually has no great incentive to feed concentrates. As summer wanes and pastures dry up, the farmer feeds a little more grain, gradually stepping up the quantity toward fall and winter. In the latter part of the winter, more milk cows freshen and the rate of feeding increases along with milk production. The peak is usually reached about April shortly before cows are turned on pasture. At that time the quantity of grain fed per cow is more than twice as great as at the summer low point which usually comes in late June or early July.

The average milk cow in this country probably gets about 1,200 pounds of grain and concentrates annually. This is about 1 pound to every $3\frac{1}{2}$ or 4 pounds of milk produced. On individual farms the quantity varies widely under the influence of many economic forces and individual situations. The rate of grain feeding is influenced both by the availability of various kinds of feeds for milk cows and by the opportunities for profit through converting concentrated feeds into dairy products. If the pasturage is limited, if hay is poor in quality, or if there is a superabundance of cheap grain on hand, milk cows are likely to be fed liberally. Likewise, the rate of grain feeding is likely to be high on farms where cows freshening in the fall reach peak milk production in winter months, and in the areas where high prices for dairy products encourage the dairyman to feed for heavy production. If the opposite type of conditions prevail, grain feeding tends to be relatively light. The effect of these economic considerations may be found in changes in level of feeding that are apparent as the size of the milk cow herd varies.

Commercial Herds are Usually Fed Best

On farms where there is only 1 milk cow--which surprisingly enough represents more than a fourth of the farms on which milk is produced -- Bossy, like an only child, tends to be somewhat pampered. She is fed well, not only because she is a pet, but because the family is dependent upon her milk for supplying the household. Since her lactation period must be made to cover as much of the year as possible, she may often get a somewhat better quality of feed than if there were several cows on hand. As the size of herd increases up to about 5 milk cows the quantity of grain fed per cow as a rule tends to decline. This is not surprising since more pasture may be available, and because of the opportunity to alternate between cows in obtaining the family's milk supply no one of them gets special attention. And, too, the return from butterfat or

homemade butter, which provide the main commercial outlet for dairy products on this type of farm, is usually not high enough to encourage heavy grain feeding. When it comes to sharing in the grain ration, the "lower one-fourth" of the milk cow population is found on the 2-to-5-cow farms.

On most farms where more than half a dozen cows are kept a larger proportion of the milk produced is sold in some form, and the commercial influence exerts additional attention toward profits from feeding. Since commercial production tends to be directed toward specific markets and the larger volume of business is associated with a better quality product, dairy farmers with large herds usually receive higher prices than those with small herds. Better cows are kept -- ones that have a higher inherent capacity for converting feed into milk. And the farmer pushes the cows harder by including more grain and concentrates in the ration. On the average, a milk cow in a herd of 20 cows or more receives 50 or 60 percent more grain and concentrates than does one in a herd of 4 or 5.

In selecting the kind of concentrated feed to give his milk cows, the farmer has a wide range of grains and millfeeds from which to choose. Reports from the Department's dairy correspondents indicate that he exhausts about every possibility. However, a majority of the feeds fall rather easily into general groups. Farm-grown grains made up a little over half the concentrate ration fed to the dairy reporters' milk cows in early fall months during the past decade. Purchased commercially mixed feeds, including various combinations of grains and millfeeds, accounted for an additional one-fourth. The farmer also used wheat millfeeds, chiefly bran, to make up about a twelfth of the ration, and oilseed meals or oilseeds in about the same proportion. Other grains and concentrates fed included many home-grown ones ranging from grain sorghums to sunflower seed, as well as miscellaneous purchased concentrates varying from hominy feed and brewer's grains to beet pulp and molasses. And in various sections of the country, just as human beings eat different foods, Bossy likewise gets her meal from different menu cards.

Mixed Feeds an Old New England Custom

In the Northeast the concentrate ration fed to milk cows takes as its precedent the pioneer custom of boiling everything together in one pot. In this case, however, a feed mill replaces the kettle, and, instead of a New England boiled dinner, Bossy gets commercial mixed feed. Grain production in this area is relatively small in relation to the livestock population, and dairymen must depend largely on purchased concentrates. With much of this purchased grain shipped in from further west, it is only natural for it to be milled and mixed in transit and purchased by the farmer in this prepared form. About two-thirds of the dairy correspondents in the North Atlantic States fed their milk cows commercial mixed feed and in the 1931-40 period it made up about 56 percent of the fall grain ration. In home-mixed rations fed in this area, corn and oats were

the most important of the grains used while wheat bran and gluten feed or meal made up the bulk of the purchased by-product feeds.

Out in the Mid-West, where "corn-fed" has a special meaning, Bossy lives off the fat of the land. In this area nearly three-fourths of the grain ration fed to milk cows by dairy reporters was home-grown, and farmers raided the corn crib and oats bin rather heavily. In early fall more than half of the reporters fed some oats to their milk cows and nearly as many fed corn. These two grains constituted about two-thirds of Bossy's concentrate ration in the North Central States, and an additional 10 percent was recruited from barley and wheat. Of the millfeeds wheat bran contributed most -- about 8 percent of the total grain ration--and commercial mixed feed hit a regional low at about 5 percent of the total.

Cottonseed meal, linseed meal, and gluten feed or meal combined contributed less than 4 percent of the concentrate ration fed by dairy reporters in this area. This situation is easily understood considering that on the farm these high protein feeds are expensive in comparison with grain, and that the dairy farmer in the Mid-West is producing milk primarily for manufactured products at a much lower unit return than is obtained by his cousin in the Northeast who produces mainly for the fluid-milk trade. However, in recent years the soybean has taken the Central States by storm, and Bossy has benefited through the protein, phosphorus, and fat it has added to her ration. In the last 2 years nearly a fourth of the dairy correspondents in the East North Central States reported soybeans or soybean meal fed to their milk cows. The contribution of this crop to the ration period was about double that of other high protein concentrates. In the important butter producing States just west of the Mississippi River, soybeans or the meal were fed by nearly a tenth of the dairy reporters on November 1, 1939 and 1940 and made up a larger part of the grain ration than cottonseed meal and linseed meal combined.

Bossy Eats Cottonseed Down South

In the South, Bossy gets a generous helping of cottonseed and its products. In the South Central States about a fourth of the grain and concentrate ration fed by dairy correspondents was cottonseed, cottonseed meal, or cottonseed cake. And it should be borne in mind that the southern dairy reporter has about 9 cows per farm compared with the usual 1 or 2 milk cows on the bulk of the farms in this area. On farms of correspondents keeping 3 milk cows or less, cottonseed products made up about two-fifths of the concentrate ration, with more unpressed seed being fed than cake and meal.

Corn also plays an important role in feeding the southern milk cow. About two-fifths of the reporters fed it and its contribution was somewhat more than a fifth of the total grain and concentrate ration. About a fourth of the dairy reporters in this area fed bran and about a sixth fed oats, both feeds being well adapted to lightening up a grain ration heavy

with corn and cottonseed. Bran, oats, and commercial mixed feed each constituted about an eighth of the total grain and concentrates fed to milk cows in the South Central region.

In the West it appears that the Hollywood trend toward diets for slender figures may have had some influence on the milk cow's grain ration. In the region including the Rocky Mountain and Pacific Coast States, Bossy is fed less grain per 100 pounds of milk produced than in any other major geographic area. However, like most of the other regional feeding peculiarities, this practice appears to have a sound economic background. Western roughage is of unusually good quality. The arid climate is ideal for curing alfalfa which grows abundantly in the irrigated valley sections. Out of the hay alone cows can get sufficient nutrients for fair milk production. And, too, the farmer who milks cows in the mountain and intermountain regions usually sells either butterfat or milk for manufacturing purposes. His chief competitors are located in or near the Corn Belt where grain is cheaper. So, from the range area westward, the farmer usually limits the grain in Bossy's ration -- except in some sections along the Pacific Coast where fluid-milk markets again enter the picture.

The basic carbohydrate feeds in the western dairy cow's ration are small grains. Dairy correspondents in this area reported that barley and oats made up nearly two-fifths of the concentrate ration fed in early fall months. Commercial mixed feed was included to the extent of a fifth of the total, closely followed by wheat millfeeds which made up about a sixth. The oil-seed meals purchased for balancing the ration were largely cottonseed meal and linseed meal.

Prices Influence Rate of Feeding

In spite of wide differences in kind of feed for milk cows in various sections, the cost of the ration serves as a common denominator for reducing feeds to a comparable basis. The value per 100 pounds of grain and concentrates fed to milk cows is influenced not only by the composition of the ration but also by the extent to which farmers rely on home-grown feeds and by local differences in the price of individual feeds.

As a rule, the value of grain and concentrates fed to milk cows is lowest in the central part of the country, where large surpluses of grain are usually available. In most of this area rations are heavily weighted to home-grown feed, much of which is fed with a minimum of grinding or other preparation. On the other hand, the grain fed to milk cows in the coastal areas is usually relatively high in price. On August 1 this year, the grain ration fed to cows in the North Atlantic States was worth about one-and-a-half times that fed in the heavy butter-producing States, Minnesota and Iowa, and nearly double that fed in the Dakotas. The high value of feed in the Northeast reflects not only the higher prices of in-shipped grains and feedstuffs, but also the cost of commercial mixing

and oftentimes a somewhat better combination of ingredients. Higher cost feeds naturally mean higher cost milk, but in this area the selling price of milk is also high. And when value of grain fed in relation to the value of the product obtained is being considered, the economic advisability of increasing milk productionn by adding grain to the ration always pops up.

The fact that the average milk cow produces about $3\frac{1}{2}$ to 4 pounds of milk for every pound of grain she consumes does not necessarily imply that an additional pound of grain in the ration will return that much additional milk. Under feeding practices carried on by dairy correspondents in recent years, an increase of 3 percent in grain fed per cow has been associated with an increase of about 1 percent in milk production per cow. This would mean about one and a quarter pounds of milk per pound of grain. And this level of response is quite close to that suggested by preliminary results of intensive research on the subject by economists and dairy specialists in the Department of Agriculture. These experiments carried on with relatively well-fed herds indicate that only 1 to 1.2 pounds of milk can be expected from an additional pound of grain in the ration. The results also confirm the principle of diminishing returns at higher feeding levels, but the investigators suggest that "Because the marginal rate falls off slowly, it pays to go much further along the curve if there is a wide margin between milk and feed prices." And the price situation today is one that would appear to justify heavier feeding of grain to milk cows.

In mid-July of this year butterfat prices were the highest in relation to feed grain prices in more than 30 years, and the ratio of milk prices to mill feed prices was among the highest half dozen for the month in a quarter century. On August 1 farmers were supplying milk cows with about 15 percent more grain per head than on that date in any of the preceding 10 years. If concentrated feeds are to be called upon to provide most of an increase of 6 percent in milk production, farmers will just about have to maintain this 15 percent increase in rate during the winter feeding period. With abundant reserve stocks on hand and a good 1941 crop in prospect, feed grains will probably be supplied liberally to milk cows this winter.

On the other hand the supply of millfeeds in more or less fixed and recent price increases have placed them in a relatively less favorable position for feeding than grain. This may tend to limit the increase in rate of feeding in some important fluid milk areas. However, grains make up the bulk of the concentrate ration fed to milk cows in areas where most of the cheese, evaporated milk, and dry skim milk are produced. And that is where the increase in milk production is most desired.

Of course, the milk cow is not the farmer's only means of carrying grain into consumption channels. Beef cattle, hogs, and chickens are also good bets this year. But when the American farmer works out his priorities on grain, Bossy can be fairly confident that her name will be high on the list.

BETTER PACKAGES FOR BETTER PRODUCTS

. By J. R. Sanborn

N. Y. State Agricultural
Experiment Station

The modern retail food package has been designed with a maximum of "consumer appeal," for research has proved that the housewife is often influenced more by the container than by the contents. Thus, after a careful study of consumers' buying habits, some manufacturers package their cheese spreads in small attractive glass tumblers. When feminine enthusiasm for the currently popular glass begins to wane, interest can be renewed by packing the product in a tumbler that is quite different from previous types in form and decoration. The housewife at once starts collecting a new set.

For the benefit of the children, the prosaic box of breakfast cereal has been transformed into a breath-taking saga of brawn and skill. Here are depicted the touchdowns that win the games. Here are shown racing cars driven at their ultimate speeds. Here are pictured snarling lions brought back alive with never a bite or a scratch to the bringer backer. And while it may be coincidence, all of the heroes who participate in these feats of derring-do eat Scrumptious Scrumbles or similar products.

The field of sales promotion is undoubtedly important, but food packaging research must also take into consideration a number of problems that involve the wholesomeness of the food itself. The principal difficulties are discolorations, mildew or mold development, off flavors, objectionable odors, insect infestations, rapid withdrawal of moisture from foods, and accumulations within the package of liquid or gaseous products.

Many of these difficulties have been overcome through the adoption of better packaging methods, but attempts to improve the quality of food-stuffs by these means serve only to emphasize the troubles that are still unsolved. Suitable packaging requires studies of the physical, biochemical, microbiological, and sanitation conditions involved in the intimate associations that exist between the food and the package. These factors are often related. For example, conditions within a package may favor accumulations of moisture or juices produced from the food. This situation frequently results in the development of undesirable microorganisms.

Investigations along these general lines, however, have made possible definite improvements in the condition of many foods through the use of proper packaging procedures. Before the modern types of butcher wraps were adopted, for example, rapid absorption of meat juices by the paper used for wrapping steaks and roasts was a common occurrence. This often resulted in a softening and tearing of the wrapper, followed by leakage. Certain types of papers also produced discoloration of the meats.

Softness of wrapped bread is still an important criterion of freshness to many housewives. Nevertheless, a crusty and better-flavored product can be obtained through the use of wrappers that retard absorption of water vapor produced by the loaf and yet allow very slow removal of this excess moisture. By preventing the accumulation of moisture and its absorption by the loaf, these wrappers contribute to definite improvements in flavor and keeping quality.

Special packages are being designed for fatty foods, such as shredded cocoanut, peanut butter, and doughnuts. The problem here is to protect the product from undesirable changes due to oxidation, absorption of odors, loss of moisture, and soluble substances that may support the growth of microorganisms. Proper control of insects at food-packaging plants and storehouses and the provision of packages that prevent or repel insect invasion--sometimes aided by special processing procedures--have done away with many of the "entomological problems." The substitution of fiber containers for metal cans in the bulk packing of ice cream is one way to prevent discoloration and certain sanitation difficulties. And blackening of processed cheese by some types of metal foil has been eliminated by paper packages.

Research Points the Way

Studies at the New York State Agricultural Experiment Station have proved that fruit juices, such as apple juice and apple-raspberry juice, reach the consumer in the best condition when packed in special enamel-lined cans. But still more research is required in order to determine the most suitable types of protective lining materials.

With the rapid expansion of drying and freezing as methods of food preservation, the Experiment Station has conducted studies on the special packaging problems involved. One experiment shows that moisture-proof wrapping of poultry, frozen and stored in commercial lockers, prevents drying and loss of flavor.

In these days of sheet steel, tin, and aluminum shortages, research workers are studying other materials and processes for the purpose of determining their possibilities for more extensive application and use. The possibilities in food packaging material need expansion.

Developments in the use of paper and paperboard for the packaging of foods have made and are still making important contributions to the maintenance of high quality in foods. The adaptability of paper and paperboard to packaging requirements traces directly to the readiness with which these products, during appropriate stages of manufacture, may be coated, impregnated, laminated, or otherwise combined with oils, waxes, gums, starch and starch derivatives, plastics, resinous materials, asphalt, rubber, latex, or even metals. Suitable paper and paperboard products also have definite advantages over some other types of packaging materials in their adaptability to the specific needs of certain classes of food-stuffs.

Paperboard Milk Bottles Are Big Success

The progress that industry is making in satisfactorily solving some of the most difficult problems in food packaging is well illustrated by the success of the paperboard container as a suitable means of packaging milk and milk products. Through the manufacture of paperboard that lends itself to waxing, it becomes possible to impregnate with paraffin and to surface-coat the container so as to render it adequately moisture-proof. This package, from the standpoint of consumers, has the double advantage of single-service use and low cost.

The materials used in the manufacture of these containers are clean and sanitary and the entire package is free from substances that are in any way deleterious to health or to the wholesomeness of the milk. Adequate provision is made for the sanitary protection of the container during fabrication, packing, and shipping, and the container provides protection for the packaged food from all forms of extraneous contamination.

Similar care is taken by manufacturers of paper milk-bottle caps and closures used on glass bottles, and the various containers that are now so generally utilized in the food industry. From a sanitation standpoint, paper containers can present a clean bill of health.

The possibilities of paper and paperboard are by no means limited to the packaging of food products. Many of the metals used in munitions are subject to deterioration from wetting, rusting, and corrosion, and paper packages are coming into increasing use as one means of preventing these conditions. All in all, the practical benefits that result from a thorough study of specific packaging requirements of essential and economically useful products are more thoroughly appreciated and extensively used than ever before.

--V--

REVISED U. S. STANDARDS FOR
DRY EDIBLE BEANS ANNOUNCED

Revised U. S. Standards for dry edible beans became effective September 1, the Agricultural Marketing Service announced recently. But the new standards differ from the old in only two major respects: They provide for greater uniformity in grade specifications for each of the numerical grades of all classes of beans, and include special grades for "handpicked" quality beans.

According to marketing officials, the revised standards will more accurately evaluate the quality of beans as marketed by producers and as purchased by consumers. Also, it is expected that the standards will provide a basis for grading and certificating beans more closely in accordance with existing trade practices.

SMITH-DOXEY CLASSING--A MAJOR PROJECT

By W. B. Lanham

Along about 1935 the Federal-State program of cotton quality improvement stood at the crossroads. Growers had been urged for years to organize into one-variety groups for the improvement of their chief crop and thousands had cooperated with a will. But they were beginning to wonder. While the quality of their cotton had improved measurably, it seemed to bring little more in the market than the ordinary lint produced by less-progressive neighbors.

More and more farmers in the organized groups felt that there was little incentive to put forth further effort and expense to produce better staple unless it could be marketed at prices commensurate with quality. Recognizing the fundamental logic of this argument, Congress in 1937 amended the Cotton Grade and Staple Statistics Act of 1927 so as to provide free classing and market news services for members of cotton improvement groups. The unified services authorized under the amendment -- commonly known as the Smith-Doxey Act -- were expected to put the grower of high-quality cotton in a better bargaining position.

Time has proved that these expectations were more than justified. The free classing and market news services were popular from the start, and each year has seen a sharp increase in the number of eligible farmers using them. With the expansion indicated for the current 1941-42 season, the Smith-Doxey work has assumed the importance of a major project. Its rapid growth is shown by the following table:

Free Classing and Market News Work, 1938-39 to 1941-42

	Groups	Members	Acreage	Samples Classed
Season	Number	Number	Number	Number
1938-39	312	18,589	467,667	83,592
1939-40	918	64,399	1,766,289	268,057
1940-41	1,573	128,216	3,860,128	1,530,764
1941-42*	2,365	254,971	7,451,167	Not Available

* Preliminary figures through August 27, 1941.

The rapid expansion of work under the Smith-Doxey Act is undoubtedly due to the many benefits to the farmer. First of all, the farmer is in a position to determine whether or not he is receiving a price in line with the quality of his product. The classification form, being acceptable for loan purposes, saves him classing fees. The classing service provides

information upon which he frequently sells his cotton directly to buyers without a resampling of the bales. And in some instances the information provided on the classification form is used to segregate cotton into even-running lots that ordinarily bring higher prices than mixed lots.

The service also helps farmers to determine the progress that has been made in quality improvement and indicates the additional quality adjustments that might be profitable. That quality is being improved as a result of this service is indicated by the fact that the cotton submitted for classification is almost always superior in grade and length of staple to other cotton produced in the same territory.

Ginners Use the Service

Not all of the benefits of the Smith-Doxey work accrue to farmers directly. A few months ago the Agricultural Marketing Service received the following letter from a large ginning company.

"We made application for the Smith-Doxey services in 1940 with only one thought in view -- to receive free classification on our cotton for the Government loan. We find that this is not the most important feature of the work.

"At first local cotton buyers were rather skeptical of the class and grades on samples as issued by your office. It was not long, however, until we found ourselves selling most of our cotton over the 'phone, purely on the basis of your grades and staple lengths.

"We feel that if this service had been available through the years that we have been in business, we would now have a better product than we do, because it would have given us a year-to-year check-up on the quality of our ginning.

"Farmers will learn that a rundown gin will cause a reduction in the quality of all his cotton. And Mr. Ginner will go to spending his rebate money on repairs or new machinery because we will realize that there is a score sheet on his gin and that Mr. Farmer is keeping it."

More farmers are keeping a score sheet on gins as a result of the Smith-Doxey work, and the quality of ginning has improved materially.

One of the early criticisms of the service was the time elapsing between the ginning of the bale and the return of the classification to the farmer, but last season the samples were generally classed the day they were received. Classing offices are now so located that in practically all cases farmers can be given 24-hour to 36-hour service.

With the inauguration of the work during the 1938-39 season, 10 offices were authorized to carry on the classing. These were located at Raleigh, N. C.; Columbia, S. C.; Atlanta, Ga.; Memphis, Tenn.; Jackson, Miss.; Little Rock, Ark.; Austin, Dallas, and El Paso, Tex.; and Bakersfield, Calif. With an increase in the number of groups applying for the service during the 1939-40 season, additional offices were opened at Lubbock, Tex., and Altus, Okla. Three more offices were opened during the 1940-41 season at Alexandria, La., Birmingham, Ala., and Hayti, Mo. For the 1941-42 season temporary classing offices at Corpus Christi, Tex., and Phoenix, Ariz., have been authorized to assist in the work. Thus, one or more classing offices are located in each of the major cotton-producing States.

Classification information is furnished farmers on forms that show the grade, staple length, and preparation of individual bales. Market information is furnished through mimeographed reports, radio broadcasts, and quotations in the newspapers. The market news work, of course, is carried on as a part of the general cotton market news service, which provides widespread dissemination of market information throughout the South and in cotton-manufacturing centers.

The organization of cotton improvement groups is sponsored by the Extension Service, through County Agents, ginners, community leaders, and field personnel of the Agricultural Marketing Service. Other State agencies, however, take an active interest. The organized groups are made up of farmers in a given community who plant some or all of their acreage to one adopted variety suited to the locality. In order to qualify for this service, the group must file formal application on forms provided by the Agricultural Marketing Service between dates set forth in the regulations and publicly announced by press and radio.

--V--

LIVESTOCK MARKET NEWS OFFICE OPENED AT MONTGOMERY, ALABAMA

To provide better service to livestock producers in the South, the Agricultural Marketing Service has opened a market news office at Montgomery, Ala. Distribution of livestock reports on a tri-weekly basis started on August 18.

These regular releases are given over chiefly to coverage of the Montgomery market, but they carry, in addition, news from other southeastern points as well as from Chicago. Periodically throughout the year, the reports will carry timely information on the hog and cattle situation for the entire country.

--V--

The farm population April 1, 1940, was 30,475,206 persons.

-PERTAINING TO MARKETING-

The following reports and publications, issued recently, may be obtained upon request from:

The Agricultural Marketing Service:

Continuous Factory Inspection Experiment and Labeling of Canned Fruits and Vegetables in Terms of U. S. Standards

United States Standards for Beans, As Revised

Regulations Governing Cotton Fiber and Spinning Tests (See page 7)

Rules and Regulations of the Secretary of Agriculture for the Enforcement of the Perishable Agricultural Commodities Act, 1930, As Amended

Market Summaries, 1941 Season:

Eastern Shore Potatoes

North Carolina Peaches

Illinois Peaches

Arkansas Peaches

Texas Spinach

California Grapes

Northwest Pears

The Bureau of Agricultural Economics:

The Wholesale Fruit and Vegetable Market of Huntington, W. Va., .
By W. C. Crow and W. W. Armentrout

Estimates of Income Per Person on Farms and Income of Persons Not on Farms, United States, 1919-40. August 1941 issue of The Farm Income Situation.

Casein Production, Imports and Consumption, . United States, 1919-40. August 1941 issue of The Dairy Situation.

Outlook for Beef Cattle, Sheep, and Lambs. August 1941 issue of The Livestock Situation.

The Commodity Credit Administration:

Trading in Wool Top Futures

